



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE AMERICAN MATHEMATICAL MONTHLY

TERMS: Two dollars per year in advance. Fifty cents additional for delivery in Foreign Countries.

SUBSCRIPTIONS should be made payable to THE AMERICAN MATHEMATICAL MONTHLY, and sent to the TREASURER, B. F. FINKEL, Springfield, Missouri.

FOREIGN AGENTS: Z. P. Maruya & Co., Ltd., Tokyo, Japan.

A. Hermann, 8 Rue de la Sorbonne, Paris, France.

The need of a standard journal in this country, with aims such as those of the AMERICAN MATHEMATICAL MONTHLY, will not be questioned. But its ultimate success will depend upon its speedily becoming self-supporting. This can happen only if the individuals who should form its constituency become subscribers in large numbers. The subscription list is rapidly increasing. All friends of the cause can assist in the good work by passing the word along to others and by sending to the Managing Editor the names of those who should be interested in such a journal. School libraries and public libraries should be included in the list.

The University of Chicago

Offers instruction during the Summer Quarter on the same basis as during the other quarters of the academic year.

The undergraduate colleges, the graduate schools, and the professional schools provide courses in Arts, Literature, Science, Commerce and Administration, Law, Medicine, Education, and Divinity. Instruction is given by regular members of the University staff, which is augmented in the summer by appointment of professors and instructors from other institutions.

First Term June 16–July 23. Second Term July 24–Aug. 29.

Detailed information will be sent upon application

The University of Chicago, Chicago, Illinois

IMPORTANT NEW MATHEMATICAL PUBLICATIONS OF THE CAMBRIDGE UNIVERSITY PRESS

AN ELEMENTARY TREATISE ON STATICS. BY S. L. LONEY, M.A. \$4.00 net.

PAPERS IN PHYSICS AND ENGINEERING.

BY JAMES THOMSON, D.Sc., LL.D., F.R.S. - - - \$4.50 net.

RADIOACTIVE SUBSTANCES AND THEIR RADIATIONS.

BY E. RUTHERFORD, D.Sc., Ph.D., LL.D., F.R.S. - - - - - \$4.50 net.

SCIENTIFIC PAPERS. BY J. Y. BUCHANAN, M.A., F.R.S. - - Vol. I. \$3.25 net.

G. P. PUTNAM'S SONS

American Representatives
Catalogues sent on request.

NEW YORK

2-4-6 West 45th St.
27-29 West 23d St.

LONDON

24 Bedford St.
Strand.

A FEW TYPICAL AUTHORITIES

Out of 1500 Specialist Contributors to

THE NEW ENCYCLOPAEDIA BRITANNICA

(Published by the Press of the University of Cambridge, England) From the field of

Mathematics and Physical Science

(Including Seven Winners of the Nobel Prize)

Major P. A. MacMahon,

Joint General Secretary, British Association, writes *Algebraic Forms*; *Combinatorial Analysis* and the biography of *Arthur Cayley*.

Prof. A. N. Whitehead,

of Cambridge, author of "A Treatise on Universal Algebra," contributes *Geometry (non-Euclidean, Axioms)*; *Mathematics*.

Prof. E. B. Elliott,

of Oxford, author of "Algebra of Quantities," etc., writes on *Curves*; *Geometry (Analytical)*.

Prof. A. E. H. Love,

of Oxford, contributes *Elasticity*; *Function (Functions of Real Variables)*; *Infinitesimal Calculus*; *Variations, Calculus of*.

Prof. William Burnside,

of the Royal Naval College, Greenwich, author of "The Theory of Groups of Finite Order," deals with *Theory of Groups*.

Prof. H. F. Baker,

of Cambridge, author of "Abel's Theorem and the Allied Theory," etc., writes on *Differential Equations*; *Functions of Complex Variables*.

Dr. E. W. Hobson,

of Cambridge, contributes *Fourier's Series*; *Spherical Harmonics*; *Trigonometry*.

Sir A. G. Greenhill,

author of "Differential and Integral Calculus with Applications"; "Hydrostatics"; etc., contributes *Ballistics*; *Gyroscope and Gyrostat*; *Hydromechanics*.

Prof. Horace Lamb,

of Manchester, author of "Hydrodynamics," etc., writes on *Dynamics*; *Harmonic Analysis*; *Mechanics, theoretical*; *Vector Analysis*; *Wave*.

Sir George H. Darwin,

(d. 1912), of Cambridge, author of "Tides and Kindred Phenomena in the Solar System," etc., has revised and amplified his epoch-making article in the 10th Edition, *Tide*.

Prof. H. L. Callendar,

writes the articles *Thermodynamics*; *Calorimetry*; *Calibration*; *Conduction of Heat*; *Fusion*; *Heat*; *Thermoelectricity*; *Thermometry*; *Vaporization*.

Lord Rayleigh,

Nobel prize winner for Physics, 1904, writes on *Argon*; *Sky*; *Capillary Action*; *Diffraction of Light*; *Interference of Light*.

Prof. H. A. Lorentz,

Nobel prize winner for Physics, 1902, noted for researches in spectroscopy and light, writes on *Light*, *Nature of*.

Sir J. J. Thomson,

Nobel prize winner for Physics, 1906, eminent for discoveries relating to the theory of electrons, writes on *Matter*; *Electric Waves*; *Röntgen Rays*; *Conduction (electric, through gases)*; *Magneto-Optics*; *Vacuum Tube*.

Dr. Wilhelm Ostwald,

Nobel prize winner for Chemistry, 1909, the effects of whose teachings regarding "matter" and "energy" are recognized as of fundamental importance to science, writes the article *Element*.

Prof. Ernest Rutherford,

Nobel prize winner for Chemistry, 1908, writes on *Radio-Activity*, the subject of which he is a leading investigator.

Prof. J. H. van't Hoff,

(d. 1911), Nobel prize winner for Physics, 1901, celebrated for his researches in physical chemistry, wrote *Isomerism* and *Stereo-isomerism*.

Prof. J. D. van der Waals,

Nobel prize winner for Physics, 1910, writes *Condensation of Gases*.

Sir James Dewar,

who first obtained liquid and solid hydrogen, contributes *Liquid Gases*.

Sir Joseph Larmor,

Lucasian Professor of Mathematics, Cambridge, author of "Aether and Matter," writes on *Aether*; *Energetics*; *Energy*; *Radiation, Theory of*; *Radiometer*; *Units, Dimensions of*.

"The feeling which one has that in consulting these volumes he will obtain an absolutely authoritative opinion is alone worth the cost of the work."—HENRY CREW (*Professor of Physics, Northwestern University*).

THE NEW Encyclopaedia Britannica

must prove
Invaluable

writes an eminent scientific authority, to one engaged in the pursuit of any science, as presenting the coordinated results of research in all the allied sciences.

To this work, the product of the organized cooperation of 1500 specialists of international reputation, one engaged in special research or teaching can turn with confidence for an adequate summing up or conspectus of any science from the viewpoint of today. The largest, newest and most useful compendium of universal information, a practical and *authoritative* hand-book on all topics for the intellectual worker, it renders a special and unparalleled service as a suggestive and stimulating resource because of the fresh light it throws upon the subject which he has made his own.

The few typical names of contributors given on the opposite page, whose qualifications for their task the mathematician is especially fitted by his training to determine for himself, are evidence of the faithfulness with which this New Edition has maintained the high and unique tradition of the Encyclopaedia Britannica of enlisting the cooperation of the best authorities. Noted men of science, whose articles appear over their signatures, have here made public, in not a few instances, results not hitherto published elsewhere in any form.

This great work traverses fields of recent research, development and experiment not touched on by any other encyclopaedia. The sum of \$1,500,000 was paid to contributors and editors, for illustrations, etc., before a single copy was offered for sale. The innovation of printing this large work of 29 vols., 28,150 pages, 44,000,000 words of text on thin, but strong and opaque India paper (made in England), each volume but *one inch thick*, has made the Encyclopaedia Britannica convenient to handle and has added immensely to its charm and usefulness. A volume may now be held easily in one hand. The work is printed also on heavy book paper.

"Several members of our faculty at the University of Chicago in the department of mathematics are owners or users of the Encyclopaedia Britannica, and I am very certain that no class of teachers is any more enthusiastic concerning this great work than are the mathematicians."—H. E. SLAUGHT (*Associate Professor of Mathematics, University of Chicago*).

The articles on Mathematics are calculated to be of distinct service to teachers and expert mathematicians in view of the novel ideas which they contain and the inclusion of matter which cannot be found in ordinary text-books. More detailed information concerning these articles will be supplied upon request.

For Prospectus, Specimen Pages, Prices, Terms of Payment (Cash, Deferred Cash or Monthly), etc., apply to the

Manager

ENCYCLOPAEDIA BRITANNICA

120 West 32nd Street

NEW YORK

Application for Prospectus
Name
Address
A. M. M. 1.

NEW BOOKS IN MATHEMATICS

A HISTORY OF JAPANESE MATHEMATICS.

By DAVID EUGENE SMITH and YOSHIO MIKAMI - - Price, Cloth \$3.00 Net.

This work sets forth, in a style that the non-mathematical will have no difficulty in following, the history of the native mathematics of Japan. It tells the interesting story of the abacus and computing rods of Japan; it relates the history of the rise of higher mathematics in the sixteenth and seventeenth centuries; it sets forth in a non-technical manner the work of scholars in the field of the *yenri*, the native calculus of the country.

Professor Smith's interest in the history of mathematics, his first-hand acquaintance with Japan, and his large collection of books and manuscripts on the native *wasan* fit him peculiarly to write upon the subject. Mr. Mikami's numerous contributions in European journals, his two published works in Oriental mathematics, and his association with Endō, the greatest of native historians of the science, make him an ideal collaborator.

The work is profusely illustrated with facsimiles from important books and manuscripts in the collection of Professor Smith.

This valuable contribution to the science of mathematics is in preparation. It will be published early in May. Advance orders may now be sent in through your local book dealer.

THE FOUNDATION AND TECHNIC OF ARITHMETIC.

By GEORGE BRUCE HALSTED - - - - - \$1.00

"The present volume is a welcome addition to the body of writings having to do with the history and the methods of teaching arithmetic. To teach any branch of mathematics with a high degree of efficiency the instructor must be conversant with its origin, foundation, meaning, aim, and its relation with other subjects and with the interests of the students."—*School Science and Mathematics*.

NON-EUCLIDEAN GEOMETRY

A Critical and Historical Study of Its Development.

By ROBERT BONOLA - - - - - Cloth, pp. 268. Price, \$2.00.

"For simplicity and elegance of treatment of a subject which was a source of confusion to mathematicians for centuries, Robert Bonola's 'Non-Euclidean Geometry' leaves little to be desired.—E. J. Moulton, *Journal of Western Society of Engineers*, Chicago.

"The author traces in admirable fashion the gradual development of Non-Euclidean geometry. The clear and concise way in which the subject is treated and the large number of references given make this book interesting and valuable."—*The Evening Post*, New York.

"The recent untimely death of Professor Bonola lends unusual interest to this book. . . . Professor Carslaw's translation is a very readable and satisfactory English version of the best historical introduction we have to the elements of Non-Euclidean geometry."—Arthur Ranum, *Bulletin of the American Mathematical Society*.

The Open Court Publishing Company is at all times pleased to send advance information concerning its publications, and sample copies of its two periodicals. The *Monist*, quarterly, and The Open Court, monthly, may be obtained upon request.

Send for our latest book list

OPEN COURT PUBLISHING COMPANY

122 SOUTH MICHIGAN AVENUE, CHICAGO

THE NEW ERA PRINTING COMPANY

LANCASTER, PA.

is prepared to execute in first-class and satisfactory manner all kinds of printing and electrotyping. Particular attention given to the work of Schools, Colleges, Universities, and Public Institutions.

Books, Periodicals

Technical and Scientific Publications

Monographs, Theses, Catalogues

Announcements, Reports, etc.

All Kinds of Commercial Work

***Printers of the Bulletin and Transactions of the
American Mathematical Society, etc., etc.)***

Publishers will find our product ranking with the best in workmanship and material, at satisfactory prices. Our imprint may be found on a number of high-class Technical and Scientific Books and Periodicals. Correspondence solicited. Estimates furnished.

THE NEW ERA PRINTING COMPANY

Modern Mathematical Series

FOR COLLEGES AND SECONDARY SCHOOLS

General Editor, LUCIEN AUGUSTUS WAIT,
Senior Professor of Mathematics, Cornell University.

TANNER AND ALLEN'S

BRIEF ANALYTIC GEOMETRY

By J. H. TANNER, *Professor of Mathematics, Cornell University*, and JOSEPH ALLEN, *Assistant Professor of Mathematics, College of the City of New York.*

THIS work is intended to satisfy the demand for a somewhat briefer book than the authors' *Elementary Course in Analytic Geometry*, but preserves the same rigor of proofs, careful analysis, and other chief features. It presents:

1. A brief view of some important notions and theorems of elementary mathematics, valuable to the average student.
2. A careful and thorough development of the analytic method of handling problems.
3. The treatment of the conic sections, not as the main topic of analytic geometry, but as one of special interest that is developed readily and completely by the analytic method.
4. The extension of the analytic method to space of three dimensions, giving enough material to show how this method is applied and to suggest its effectiveness.
5. The inclusion of a chapter on Curve Tracing. The curves shown are chosen particularly with reference to future study by methods of the calculus.
6. Rigorous proof of all the theorems within the scope of the book.
7. An abundance of carefully graded numerical exercises.
8. The omission of less important subjects, such as poles and polars, confocal conics, etc.

Your correspondence in regard to this and other books of the MODERN MATHEMATICAL SERIES is invited and will receive courteous attention.

AMERICAN BOOK COMPANY

NEW YORK
CINCINNATI
CHICAGO

1104 South Wabash Avenue
CHICAGO